

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

PMRA Submission Number: 2008-0430

PMRA Document ID: 1731030

EPA MRID Number: 47699904

Data Requirement:	PMRA Data Code	9.6.3.1
	EPA DP Barcode	D349851
	OECD Data Point	IIA 8.1.4
	EPA MRID	47127915
	EPA Guideline	OPPTS 850.2300

Test material: BAS 800 H **Purity:** 93.8%

Common name Saflufenacil

Chemical name:

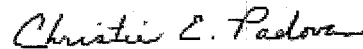
IUPAC: *N'*-(2-chloro-4-fluoro-5-[1,2,3,6-tetrahydro-3-methyl-2,6-dioxo-4-(trifluoromethyl)-pyrimidin-1-yl]benzoyl)-*N*-isopropyl-*N*-methylsulfamide

CAS: 2-chloro-5-[3,6-dihydro-3-methyl-2,6-dioxo-4-(trifluoromethyl)-1(2*H*)-pyrimidinyl]-4-fluoro-*N*-[[methyl(1-methylethyl)amino]sulfonyl]benzamide


CAS No.: 372137-35-4

Synonyms: None reported

Primary Reviewer: Christie E. Padova
Staff Scientist, Dynamac Corporation


Signature: 
Date: 04/07/08

Secondary Reviewer: Teri S. Myers
Senior Scientist, Cambridge Environmental Inc.

Signature: 
Date: 04/15/08

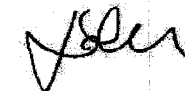
Primary Reviewer: Anita Pease
U.S. EPA, Senior Biologist

Date: 06/09/09


 6/9/09

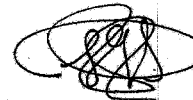
Secondary Reviewer: Janine Glaser
HC-PMRA-EAD

Date: 06/09/09



Secondary Reviewer: Farzad Jahromi
DEWHA-APVMA

Date: 06/09/09



Company Code BAZ
Active Code SFF
Use Site Category 13 (terrestrial feed crops) and 14 (terrestrial food crops)
EPA PC Code 118203

CITATION: Zok, S. 2006. BAS 800 H – 1-Generation Reproduction Study on the Bobwhite Quail (*Colinus virginianus*) by Administration in the Diet. Unpublished study performed by Experimental Toxicology and Ecology, BASF Aktiengesellschaft, Ludwigshafen/Rhein, Germany. Laboratory Report No. 71W0414/015148. Study sponsored by BASF Corporation, Research Triangle Park, NC. Study initiated January 27, 2006 and submitted December 20, 2006.

DISCLAIMER: This document provides guidance for EPA and PMRA reviewers on how to complete a data evaluation record after reviewing a scientific study concerning the reproductive effects of a pesticide on avian species. It is not intended to prescribe conditions to any external party for conducting this study nor to establish absolute criteria regarding the assessment of whether the study is scientifically sound and whether the study satisfies any applicable data requirements. Reviewers are expected to review and to determine for each study, on a case-by-case basis, whether it is scientifically sound and provides sufficient information to satisfy applicable data



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requirements. Studies that fail to meet any of the conditions may be accepted, if appropriate; similarly, studies that meet all of the conditions may be rejected, if appropriate. In sum, the reviewer is to take into account the totality of factors related to the test methodology and results in determining the acceptability of the study.

EXECUTIVE SUMMARY

The one-generation reproductive toxicity of BAS 800 H (saflufenacil) to 16 pairs per level of *ca.* 5-month old northern bobwhite quail (*Colinus virginianus*) was assessed over 22 weeks. BAS 800 H was administered to the birds in the diet at nominal concentrations of 0 (control), 100, 300, and 1000 mg a.i./kg diet (adjusted for purity). Mean-measured concentrations were <10.0 (<LOQ, control), 96.0, 282, and 940 mg a.i./kg diet, respectively. Daily doses of the three treatment levels, based on measured concentrations of the technical substance, were 7.3, 20.7, and 70.1 mg a.i./kg bw, respectively.

The reviewer's analysis detected a significant treatment-related effect on hatchling body weight at the two highest treatment levels. No other biologically-significant treatment-related effects were observed on any adult or offspring parameter at any concentration level. Based on these results, the NOAEC and LOAEC were 96.0 and 282 mg a.i./kg.

This study is classified as **ACCEPTABLE** to U.S. EPA and as **FULLY RELIABLE** to PMRA and APVMA as it is scientifically sound and satisfies the guideline requirement for a northern bobwhite quail (*Colinus virginianus*) reproductive toxicity study.

Results Synopsis

Test Organism Size/Age (mean Weight): *ca.* 5-months old; 172.2-249.8 g (combined sexes)

NOAEC: 96.0 mg a.i./kg diet (7.3 mg a.i./kg bw)

LOAEC: 282 mg a.i./kg diet (20.7 mg a.i./kg bw)

Endpoint(s) Affected: hatchling body weight

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I. MATERIALS AND METHODS

GUIDELINE FOLLOWED:

The study protocol was based on procedures outlined in the U.S. EPA *Pesticide Assessment Guidelines*, §71-4 (1982) taking into account the U.S. EPA Standard Evaluation Procedure (SEP), EPA 540/9-86-139 (1986); OECD Guideline No. 206 (1984); and U.S. EPA Ecological Effects Test Guidelines, OPPTS 850.2300 (1996). There were no deviations from OECD Guideline No. 205 noted. Deviations from OPPTS Guideline No. 850.2300 included:

1. The initial age of the test birds (*ca.* 5 months) was younger than recommended (at least 30 weeks old).
2. Cage size was significantly smaller than recommended. OPPTS recommends at least 5,000 cm² per bird. In this study, the floor space was only 1328 cm² per bird.

These deviations do not affect the scientific soundness of this study.

COMPLIANCE:

Signed and dated GLP, Quality Assurance and Data Confidentiality statements were provided.

A. MATERIALS:

1. Test Material

BAS 800 H

Description:

Solid, light beige

Lot No./Batch No. :

COD-000515

Purity:

93.8%

Stability of compound under test conditions:

The stability of BAS 800 H was assessed in treated feed prepared at all treatment levels after 10 days of ambient storage (including 7 days in open feeders) during Week 1 (batch test diets were prepared 3 days prior to test initiation). Recoveries averaged 90.1-99.4% of nominal concentrations.

(OECD recommends water solubility, stability in water and light, pKa, Pow, and vapor pressure of test compound)

Storage conditions of test chemicals:

Room temperature

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Physicochemical properties of saflufenacil.

Parameter	Values	Comments
Water solubility at 20°C	2.1 g/L	pH 7
Vapor pressure	4.5×10^{-15} Pa	20°C
UV absorption	272 nm	pH1/pH7
pKa	Neutral	Ambient pH
Kow	Log P _{ow} 2.6	20°C

2. Test organism:

Table 1: Test organism.

Parameter	Details	Remarks
		Criteria
Species (common and scientific names):	Northern bobwhite quail (<i>Colinus virginianus</i>)	<p>Birds were from the same hatch, and were phenotypically indistinguishable from wild birds.</p> <p><i>Recommended species include a wild waterfowl species, preferably the mallard (Anas platyrhynchos) or an upland game species, preferably the northern bobwhite (Colinus virginianus)</i></p>
Age at Study Initiation:	Ca. 5 months old	<p>Birds were younger than recommended (≥ 30 weeks). It was stated that birds were approaching their first breeding season.</p> <p><i>Birds approaching their first breeding season should be used.</i></p>
Body Weight: (mean and range)	<p>Males: Overall range (n=80) of 175.1 to 243.8 g, with group means of 207.1 to 209.5 g.</p> <p>Females: Overall range (n=80) of 172.2-249.8 g, with group means of 202.0 to 204.4 g.</p>	<p>Body weights were recorded at weeks 0, 2, 4, 6, 8, and 22 (adult termination).</p> <p><i>Body weights should be recorded at test initiation and at biweekly intervals up to week eight or up to the onset of egg laying and at termination.</i></p>

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Parameter	Details	Remarks
		Criteria
Source:	H. & E. Küberich, Wiesentheid/Geesdorf, Germany	All birds should be from the same source.

B. STUDY DESIGN:

1. Experimental Conditions

a. Range-finding study: None reported.

b. Definitive Study

Table 2: Experimental Parameters.

Parameter	Details	Remarks
		Criteria
Acclimation period:	3 weeks	During acclimation, birds were inspected daily for health and received 7 hours of light/day.
Conditions (same as test or not):	Same as test	
Feeding:	"Provimi Kliba SA" commercial diet for quails and ducks in meal form (Kaiseraugst, Basel, Switzerland) and municipal water from the city of Frankenthal were offered <i>ad libitum</i>	Recommended observation period includes a 2-3 week health observation period prior to selection of birds for treatment. Generally, birds should be healthy without excess mortality. Feeding should be <u>ad libitum</u> , and sickness, injuries or mortality should be noted.
Health (any mortality observed):	1.6% mortality during acclimation; all deaths were the result of injuries from fighting.	
<u>Test duration</u>		

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Parameter	Details	Remarks
		Criteria
pre-laying exposure: egg-laying exposure: withdrawal period, if used:	10 weeks 12 weeks N/A	<p><u>Recommended pre-laying exposure duration:</u> At least 10 weeks prior to the onset of egg-laying.</p> <p><u>Recommended exposure duration with egg-laying:</u> At least 10 weeks.</p> <p><u>Recommended withdrawal period:</u> If reduced reproduction is evident, a withdrawal period of up to 3 weeks should be added to the test phase.</p>

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Parameter	Details	Remarks <i>Criteria</i>
<p><u>Pen (for parental and offspring) size:</u></p> <p>construction materials:</p> <p>number:</p>	<p>Parents (one pair) were housed in battery cages measuring 0.59 x 0.45 x 0.26 m. Offspring (by set and group) were housed in open-topped pens measuring 0.65 x 1.3 m during egg-laying week 1 or 0.65 x 2.6 m during egg-laying weeks 2-12.</p> <p>Parental pens were constructed of stainless steel wire-mesh, with sloping wire mesh floors and egg catchers. Offspring pens were constructed of plastic; the floor inside the pens was covered with corrugated board.</p> <p>16 parental pens/treatment level. Hatchlings were group-housed according to the appropriate parental concentration.</p>	<p>Cage size was significantly smaller than recommended. OPPTS recommends at least 5,000 cm² per bird. In this study, the floor space was only 1,328 cm² per bird. Cage sizes smaller than recommended should be shown to not adversely affect the health or reproduction of the quail.</p> <hr/> <p><i>Pens</i> Pens should have adequate room and be arranged to prevent cross-contamination.</p> <p><i>Materials</i> Recommended materials include nontoxic material and nonbinding material, such as galvanized steel.</p> <p><i>Number</i> At least 5 replicate pens should be used for mallards housed in groups of 7. For other arrangements, at least 12 pens should be used, but considerably more may be used if birds are kept in pairs. Chicks should be housed according to parental grouping.</p>
<p>Number of birds per pen (male:female)</p>	<p>2 birds/pen (1 male:1 female)</p>	<hr/> <p>One male and one female per pen should be used. For quail, one male and two females should be used. For ducks, two males and five females should be used.</p>
<p><u>Number of pens per group/treatment</u></p> <p>negative control:</p> <p>solvent control:</p> <p>treated:</p>	<p>16 pens</p> <p>N/A</p> <p>16 pens/treatment</p>	<p>During the pre-egg-laying period, four additional replicates with spare birds were maintained for each of the four test groups under the same conditions.</p> <hr/> <p>At least 12-16 pens should be used, but considerably more if birds are kept in pairs.</p>

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Parameter	Details	Remarks
		Criteria
<u>Test concentrations (mg a.i./kg diet)</u> nominal: measured:	0 (control), 100, 300, and 1000 mg a.i./kg diet <10.0 (<LOQ, control), 96.0, 282, and 940 mg a.i./kg diet, respectively (equivalent to 7.3, 20.7, and 70.1 mg a.i./kg bw, respectively)	Nominal concentrations were adjusted for the purity of the test substance.
		Measured concentrations were determined at all levels during Weeks -1 (fresh diet mixes), 2 (from feed hoppers), 10 (from storage containers), and 20 (from storage containers). Measured concentrations ranged from 91-102% of nominal concentrations, and averaged 94-96% for all treatment levels.
Maximum labeled field residue anticipated and source of information:	Not specified	<i>Recommended test concentrations include at least two concentrations other than the control; three or more will provide a better statistical analysis. The highest test concentrations should show a significant effect or be at or above the actual or expected field residue level.</i>
		It was reported that the U.S. EPA recommends an upper limit concentration of 1000 mg/kg diet for avian reproduction studies.
Solvent/vehicle, if used type: amount:	N/A	<i>The highest test concentrations should show a significant effect or be at or above the actual or expected field residue level. The source (i.e., maximum label rate in lb ai/A and ppm), label registration no., label date, and site should be cited]</i>
		<i>Recommended solvents include corn oil or other appropriate vehicle not more than 2% of diet by weight</i>

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Parameter	Details	Remarks
		Criteria
Was detailed description and nutrient analysis of the basal diet provided? (Yes/No)	Yes. The basal ration (three batches) contained 23.3-24.9% crude protein, 6.8-7.3% crude fat, and 2.7-3.5% crude fiber.	Offspring were fed basal ration without the addition of test substance. <i>A commercial breeder feed or an equivalent that is appropriate for the test species is recommended.</i>
Preparation of test diet	Three days prior to study initiation, the appropriate amount of test substance was mixed with diet in a beaker. Thereafter, each premix was adjusted to the desired concentration with the appropriate amount of feed and mixed for about 10 minutes in a laboratory mixer. Treated feed was prepared every week during the study, and was stored at ambient temperature.	<i>A premixed diet containing the test substance should be mechanically mixed with basal diet. If an evaporative vehicle is used, it should be completely evaporated prior to feeding.</i>
Indicate whether stability and homogeneity of test material in diet determined (Yes/No)	Yes	
Were concentrations in diet verified by chemical analysis?	Yes	

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Parameter	Details	Remarks
		Criteria
Egg Collection and Incubation		
<u>Egg collection and storage</u> collection interval: storage temperature: storage humidity:	Daily Ca. 16 ± 1°C Ca. 60-86%	Eggs should be collected daily; recommended egg storage temperature is approximately 16°C (61°F); recommended humidity is approximately 65%. Recommended collection interval: daily
Were eggs candled for cracks prior to setting for incubation?	Yes	Eggs should be candled on day 0
Were eggs set weekly?	Yes	
When candling was done for fertility?	Eggs were candled again on Days 11 (embryo viability) and 18 (embryo survival).	Quail: approx. day 11 Ducks: approx. day 14
When the eggs were transferred to the hatcher?	Day 21	Bobwhite: usually day 21 Mallard: usually day 23
<u>Hatching conditions</u> temperature: humidity: photoperiod:	Ca. 37.7-37.9°C Ca. 80-90% 17 hr light/day (hatchlings)	An area with a higher temperature (40 ± 2°C) was maintained by ceramic radiant heaters above the hatchling cages. Recommended temperature is 39°C (102°F) Recommended humidity is 70%
Day the hatched eggs were removed and counted	Day 25, within approximately 24 hours of hatching	Eggs for bobwhite should be removed on day 24; for mallard on day 27
Were egg shells washed and dried for at least 48 hrs before measuring?	Yes	

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Parameter	Details	Remarks
		Criteria
<u>Egg shell thickness</u> no. of eggs used: intervals: mode of measurement:	One egg of each pair that laid at least one egg. Weeks 1, 3, 5, 7, 9, and 11 of the egg production period. Four points around the girth of the shell using a micrometer graduated to 0.01 mm.	<i>Newly hatched eggs should be collected at least once every two weeks. Thickness of the shell plus membrane should be measured to the nearest 0.01 mm with 3 - 4 measurements per shell.</i>
Reference chemical, if used	None used	

2. Observations:

Table 3: Observations.

Parameter	Details	Remarks
Parameters measured		
<u>Parental</u> (mortality, body weight, mean feed consumption)	- mortality - body weight - food consumption - signs of toxicity - palatability - necropsy	Extra birds which were sacrificed at the end of the pre-egg laying period and those which were terminated because the pen-mate had died were not examined post-mortem.
<u>Egg collection and subsequent development</u> (no. of eggs laid, no. of eggs cracked, shell thickness, no. of eggs set, no. of viable embryos, no. of live 3 week embryos, no. hatched, no. of 14-day survivors, average weight of 14-d old survivors, mortality, gross pathology, others)	- eggs laid - eggs cracked - egg weight - egg shell thickness - eggs set - viable embryos - live 3-week embryos - chicks dead in shell - number of hatchlings - hatchling abnormalities - hatchling body weight - number of 14-day-old survivors - 14-day-old survivor body weight - signs of toxicity of hatchlings	<i>Recommended endpoints measured include:</i> <ul style="list-style-type: none"> • Eggs laid/pen • Eggs cracked/pen • Eggs set/pen • Viable embryos/pen • Live 3-week embryos/pen • Normal hatchlings/pen • 14-day-old survivors/pen • 14-day-old survivors/pen • Weights of 14-day-old survivors (mean per pen) • Egg shell thickness • Food consumption (mean per pen) • Initial and final body weight (mean per pen)

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Parameter	Details	Remarks
Indicate if the test material was regurgitated	No indications of dietary regurgitation.	
Observation intervals (for various parameters)	Parental and hatchling mortality and signs of toxicity were recorded once daily. Parental body weights were recorded at weeks 0, 2, 4, 6, 8, and 22 (adult termination). Parental food consumption was measured weekly throughout the test.	Body weights and food consumption should be measured at least biweekly
Were raw data included?	Yes	

II. RESULTS AND DISCUSSION:

A. MORTALITY:

There was no mortality that could be attributed to the test substance. Ten incidental mortalities occurred during the study: two in the control group, three in the 300 mg a.i./kg diet group, and five in the 1000 mg a.i./kg diet group.

One control female was sacrificed *in extremis* during Week 5 due to lesions on both feet. Another control female was found dead during Week 14; no signs of illness or gross post-mortem abnormalities were observed, and the cause of death was unknown.

At the 300 mg a.i./kg diet level, two females were found dead, one during Week 9 and another during Week 17; the causes of death were unknown. Necropsy of the female found dead during Week 17 revealed lesions on both feet with the surface partly encrusted; no other abnormalities were detected at necropsy and no signs of illness were observed prior to death of either bird. Another female from this level was sacrificed *in extremis* during Week 12 due to head injuries from fighting; aside from head lesions with partial ulceration, no other abnormalities were observed at necropsy.

At the 1000 mg a.i./kg diet level, one male was found dead during Week 10, and another two females were found dead, one each during Weeks 13 and 22; no signs of illness or gross post-mortem abnormalities were observed, and the causes of death were unknown. Two additional females from this level were sacrificed *in extremis*: one during Week 12 due to head injuries from fighting and another during Week 20 due to foot lesions. Aside from the associated lesions due to the injuries, no further abnormalities were observed upon necropsy of these birds.

No other mortalities were observed during the study, and based upon the findings at necropsy, all deaths were considered incidental to treatment. The NOAEC for adult mortality was 1000 mg a.i./kg diet.

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Table 4: Effect of BAS 800 H (Saflufenacil) on Mortality of Northern Bobwhite.

Treatment (mg a.i./kg diet) Mean-measured (and Nominal) Concentrations	Observation Period					
	Week 7		Week 15		Week 22	
	No. Dead		No. Dead		No. Dead	
	Male	Female	Male	Female	Male	Female
Control	0	1	0	2	0	2
96.0 (100)	0	0	0	0	0	0
282 (300)	0	0	0	2	0	3
940 (1000)	0	0	1	2	1	4

B. REPRODUCTIVE AND OTHER ENDPOINTS:

Abnormal Effects/Behavior: No overt signs of toxicity were observed in any treatment group. Incidental clinical observations included moderate lesions from fighting and subsequent injuries. In addition, transient diarrhea was observed for 9 days in one cage at the 1000 mg a.i./kg diet level. The NOAEC for clinical signs of toxicity was 1000 mg a.i./kg diet.

Food Consumption: No rejection of food containing the test substance was observed, and no apparent treatment-related effects on feed consumption were evident at any concentration level tested. Statistical evaluation revealed a statistically-significant increase at the 1000 mg a.i./kg diet level compared to the control during Weeks 8 (14.3 versus 13.0 g/bird/day; $p \leq 0.01$), 16 (23.8 versus 20.5 g/bird/day; $p \leq 0.05$), and 20 (17.7 versus 13.3 g/bird/day; $p \leq 0.05$), and a significant decrease at the 1000 mg a.i./kg diet level compared to the control during Week 17 (13.1 versus 17.1 g/bird/day; $p \leq 0.05$). Since the mean values for all groups were within a narrow range and no dose-related trend was observed, the differences observed were considered incidental to treatment by the study authors. The NOAEC for feed consumption was 1000 mg a.i./kg diet.

Overall mean feed consumption was 15.9, 16.4, 16.2, and 16.1 g/bird/day for the 0, 100, 300, and 1000 mg a.i./kg diet groups, respectively. The calculated mean uptake of test substance was 1.58, 4.55, and 15.15 mg a.i./bird/day for the 100, 300, and 1000 mg a.i./kg diet groups, respectively. The calculated daily dose was 7.3, 20.7, and 70.1 mg a.i./kg bw, respectively.

Body Weight: A statistically significant decrease in hatchling body weight was observed at the 1000 mg a.i./kg diet dose in week 1-4, 9-12, and over the total egg-laying period. Although the trend was clearly dose-related and could be seen over the whole egg-laying period, the study authors report the finding as a "borderline effect of the test substance, but not biologically adverse effect". The study authors conclude that the test substance did cause a slight but not biologically adverse effect on chick body weight at hatch.

Necropsy: There were no macroscopic findings upon necropsy of surviving birds that were considered related to treatment.

Egg production and quality: No statistically-significant differences in overall egg production, overall egg weight, or mean egg shell thicknesses were observed at any treatment level compared to the control. A small, statistically-

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significant increase in the percentage of cracked and broken eggs of eggs laid was observed at the 100 mg a.i./kg diet level compared to the control (9.7 versus 6.1%; $p \leq 0.05$); however, no dose-related trend was observed, and the difference was not considered to be related to treatment by the study authors.

Embryo survival: The number of fertile eggs totaled 714, 708, 669, and 551 for the control, 100, 300, and 1000 mg a.i./kg diet groups, respectively, and the corresponding overall fertility rates were 94.7, 86.7, 93.3, and 81.9%, respectively. A slight, statistically-significant reduction in the proportion of fertile eggs of eggs set was observed at the 1000 mg a.i./kg diet level compared to the control ($p \leq 0.05$). The study author reported that the fertility rate of the 1000-mg a.i./kg group was within the normal values for the control group given in the test guidelines, while the fertility rate of the control observed in this study was above the range of the historical controls (79.1-98.6% in the last 18 studies carried out in the laboratory since 1993). Furthermore, it was reported that the statistically-significant difference observed was mainly a consequence of the markedly decreased number of fertile eggs on the onset of the egg-laying period. Thus, the decreased fertility rate at the highest treatment level was not considered to be an effect of the test substance.

For the control, 100, 300, and 1000 mg a.i./kg diet levels, the rates of viable 11-day embryos of eggs initially set were 92.7, 84.4, 92.1, and 79.0%, respectively, the rates of live 18-day embryos of viable 11-day embryos were 99.5, 99.0, 99.6, and 98.8%, respectively, and the rates of "dead-in-shell" of fertile eggs were 14.6, 15.0, 11.4, and 14.6%, respectively. No statistically-significant differences from the control were observed for any endpoint.

Hatching and hatchlings: The proportion of hatched chicks of live 18-day embryos was 82.7, 81.1, 86.8, and 80.0% for the control, 100, 300, and 1000 mg a.i./kg diet levels, respectively, with no statistically-significant differences from the control observed. No clinical signs of toxicity were observed at any treatment level. Although a small percentage of chick hatched had crippled feet or a malformed spinal column, these effects were seen in all test groups including the control and were clearly not related to treatment.

For all test groups including the control, the survival after hatch decreased during the last 5 weeks of the egg-laying period. Therefore, the length of the egg-laying period resulted in a relatively low survival rate of chicks after hatch. The proportion of 14-day survivors to number of hatchlings were 66.9, 76.7, 67.4, and 55.9% for the control, 100, 300, and 1000 mg a.i./kg diet levels, respectively. No statistically-significant differences to the control were observed over the whole egg-laying period for any level. In addition, there were no statistically-significant differences compared to the control in the mean numbers of 14-day surviving chicks per female and week.

Although no statistically-significant differences compared to the controls were observed by the study author in the 14-day survivors' body weights over the whole egg-laying period, a statistically-significant decrease in mean hatchlings' body weight was observed at the 1000 mg a.i./kg diet dose. However, the study authors report the finding as a "borderline effect of the test substance, but not biologically adverse effect".

Overall, there were no biologically-significant treatment-related effects on the reproductive parameters in any treatment level; the NOAEC for all applicable endpoints was 1000 mg a.i./kg.

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Table 5: Reproductive and Other Parameters (nominal concentrations; study author-reported).

Parameter	Control	100 mg a.i./kg	300 mg a.i./kg	1000 mg a.i./kg	NOAEC/ LOAEC
Eggs laid	873	988	815	743	N/A
Eggs laid/hen/week	4.5	5.1	4.2	3.9	1000 mg a.i./kg >1000 mg a.i./kg
Eggs cracked	46	88	32	51	N/A
Egg weight (g)	10.4	10.2	10.1	9.8	1000 mg a.i./kg >1000 mg a.i./kg
Eggs set	754	819	717	625	N/A
Shell thickness (mm)	0.20	0.19	0.20	0.19	1000 mg a.i./kg >1000 mg a.i./kg
Viable embryos	700	687	659	538	N/A
Live 3-week embryos	697	682	656	535	N/A
No. of hatchlings/hen/week	3.1	3.0	3.0	2.4	1000 mg a.i./kg >1000 mg a.i./kg
No. of hatchlings	597	575	571	454	N/A
Hatchling weight (g)	6.5	6.4	6.2	5.9*	1000 mg a.i./kg >1000 mg a.i./kg
14-day old survivors	414	442	367	296	N/A
14-day old survivors/hen/week	2.2	2.3	1.9	1.6	1000 mg a.i./kg >1000 mg a.i./kg
14-day old survivors weight (g)	21.3	20.9	20.6	20.5	1000 mg a.i./kg >1000 mg a.i./kg
Mean food consumption (g/bird/day)	15.9	16.4	16.2	16.1	1000 mg a.i./kg >1000 mg a.i./kg
Weight (g) of parent females at test initiation:	204.3	202.0	203.3	204.4	1000 mg a.i./kg

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Parameter	Control	100 mg a.i./kg	300 mg a.i./kg	1000 mg a.i./kg	NOAEC/ LOAEC
at onset of egg laying:	204.5	209.5	207.7	209.0	>1000 mg a.i./kg
at test termination:	239.2	241.7	244.9	232.2	
Weight (g) of parent males					
at test initiation:	209.5	207.1	208.8	207.9	1000 mg a.i./kg
at onset of egg laying:	212.9	214.5	213.4	209.0	>1000 mg a.i./kg
at test termination:	214.2	212.3	220.1	219.4	
Gross pathology	No treatment-related abnormalities observed.				

N/A = Not statistically-analyzed.

* Statistically significantly different to the control group ($p < 0.01$).

C. REPORTED STATISTICS:

The following variables were statistically analyzed: adult body weight, adult feed consumption, eggs laid per female, proportion of eggs damaged of egg laid, egg weight, egg shell thickness, proportion of fertile eggs of eggs initially set, proportion of viable 11-day embryos of eggs initially set per female, proportion of early embryonic deaths on day 11 of fertile eggs per female, proportion of late embryonic deaths on day 18 of fertile eggs per female, proportion of viable 18-day embryos of eggs initially set per female, proportion of viable 18-day embryos of fertile eggs per female, proportion of viable 18-day embryos of viable 11-day embryos per female, proportion of "dead-in-shell" of fertile eggs per female, hatched chicks per female, proportion of normal hatchlings of eggs set per female, proportion of normal hatchlings of fertile eggs per female, proportion of normal hatchlings of viable 18-day embryos per female, 14-day old survivors per female, proportion of 14-day old survivors of eggs set, proportion of 14-day old survivors of fertile eggs per female, proportion of 14-day old survivors of normal hatchlings per female, means for hatched chicks' body weight at day 0, and means for 14-day surviving chicks' body weight.

For the body weight and food consumption of parent birds, for the egg weight, egg shell thickness, and chicks' body weight, a comparison of each dose group with the control group was performed using a two-sided Dunnett's test for the hypothesis of equal means. For count data (e.g., no of eggs, no. of hatched chicks) and proportions (e.g., no. of fertile eggs of initially set), a nonparametric analysis was carried out. A pairwise comparison of each dose group with the control was performed via the one-sided Wilcoxon test for the hypothesis of equal medians.

Sample units were the individual pens within each experimental group, except adult body weights, where the sample unit was the individual bird. If proportions were analyzed, sums of each pen were used in the numerator and in the denominator. The statistical analyses were performed using the SAS-System. For the analysis of the body weight and of the food consumption of parent birds, the DATATOX F1-System was used. Nominal concentrations were used for all estimations.

D. VERIFICATION OF STATISTICAL RESULTS:

Statistical Method: Analysis was conducted using "chicks.sas" (Ver. 3; March 2002), a SAS program provided by EFED/OPP/USEPA. Data for all endpoints were examined graphically using box plots to determine if they

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exhibited a dose-dependent response, which was ultimately used to select the multiple comparison test to detect LOAEC and NOAEC. Data for each endpoint were tested to determine if their distributions were normal and if their variances were homogeneous using Shapiro-Wilk's and Levene's tests, respectively. Data that satisfied these assumptions were subjected to Dunnett's and William's tests and data that did not satisfy these assumptions were subjected to the non-parametric MannWhitney-U (with a Bonferroni adjustment) and Jonckheere's tests. Data for dead birds were excluded from the analyses. See Appendix I for output of reviewer's statistical verification and graphs for affected endpoints to support any reviewer-generated conclusions that may differ from those reported in the study.

NOAEC: 96.0 mg a.i./kg diet

LOAEC: 282 mg a.i./kg diet

Endpoint(s) Affected: hatchling body weight

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Table 6: Reproductive and Other Parameters (mean-measured concentrations; reviewer-reported).

Parameter	Control	96.0 mg a.i./kg	282 mg a.i./kg	940 mg a.i./kg	NOAEC/ LOAEC
Eggs laid/pen	58.2	61.8	54.3	53.1	940 mg a.i./kg >940 mg a.i./kg
Eggs cracked/pen	3.1	5.5**	2.1	3.6	940 mg a.i./kg >940 mg a.i./kg
Eggs not cracked/eggs laid (%)	93.9	90.3	90.1	93.8	940 mg a.i./kg >940 mg a.i./kg
Eggs set/pen	50.3	51.2	47.8	44.6	940 mg a.i./kg >940 mg a.i./kg
Shell thickness	0.20	0.20	0.20	0.20	940 mg a.i./kg >940 mg a.i./kg
Eggs set/eggs laid (%)	85.3	82.0	81.3	81.8	940 mg a.i./kg >940 mg a.i./kg
Viable embryos/pen	47.6	44.2	44.6	39.4	940 mg a.i./kg >940 mg a.i./kg
Viable embryos/eggs set (%)	94.7	86.7	93.3	82.0	940 mg a.i./kg >940 mg a.i./kg
Live embryos/pen	46.5	42.6	43.7	38.2	940 mg a.i./kg >940 mg a.i./kg
Live embryos/viable embryos (%)	97.2	96.0	98.2	94.6	940 mg a.i./kg >940 mg a.i./kg
No. of hatchlings/pen	39.8	35.9	38.1	32.4	940 mg a.i./kg >940 mg a.i./kg
No. of hatchlings/eggs laid (%)	67.1	58.0	65.6	55.3	940 mg a.i./kg >940 mg a.i./kg
No. of hatchlings/eggs set (%)	78.4	70.9	80.9	65.8	940 mg a.i./kg >940 mg a.i./kg
No. of hatchlings/live embryos (%)	85.0	84.0	88.4	83.8	940 mg a.i./kg >940 mg a.i./kg
Hatchling survival/pen	27.6	27.6	24.5	21.1	940 mg a.i./kg >940 mg a.i./kg
Hatchling survival/eggs set (%)	52.7	54.0	55.0	40.7	940 mg a.i./kg >940 mg a.i./kg

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Hatchling survival/no. of hatchlings (%)	66.9	76.7	67.4	59.9	940 mg a.i./kg >940 mg a.i./kg
Hatchling weight (g)	6.58	6.44	6.25*	5.98***	96.0 mg a.i./kg 282 mg a.i./kg
Survivor weight (g)	21.4	20.8	19.2	20.4	940 mg a.i./kg >940 mg a.i./kg
Mean food consumption (g/bird/day)	15.9	16.5	16.1	16.2	940 mg a.i./kg >940 mg a.i./kg
Male weight gain (g)	5.8	6.8	10.9	5.5	940 mg a.i./kg >940 mg a.i./kg
Female weight gain (g)	31.9	39.9	38.0	25.5	940 mg a.i./kg >940 mg a.i./kg

* Statistically different from the control at $p < 0.05$.

** Statistically different from the control at $p < 0.01$.

*** Statistically different from the control at $p < 0.001$.

E. STUDY DEFICIENCIES:

There were no study deficiencies.

F. REVIEWER'S COMMENTS:

Results of the reviewer's statistical verification differed from the study author's for the hatchling body weight parameter. The study authors observed a statistically-significant difference in hatchling body weight at the highest dose, but discounted the effect as "slight" and not biologically adverse. The reviewer disagrees with the study author's interpretation of the hatchling body weight results. The reviewer's analysis detected significant reductions in hatchling body weight at the two highest treatment levels; 5.4% ($p = 0.031$) and 9.5% ($p < 0.001$) reductions in hatchling body weight were observed at the 282 and 940 mg a.i./kg levels, respectively. It is U.S. EPA's policy to base endpoint selection on the most sensitive treatment-related parameter related to survival, growth, or fecundity that is statistically and/or biologically significant as compared to the control. In addition, a clear dose-related effect was observed for the hatchling body weight parameter. The reviewer calculated mean hatchling body weight by summing the weekly day 0 chick body weights for each replicate and dividing this sum by the total number of hatched chicks per replicate. The spreadsheet used to perform these calculations is provided with the raw data files submitted with this DER. With the exception of the hatchling body weight analysis, the reviewer's calculations agreed with the study author's for all other levels and endpoints. The reviewer's conclusions, based on mean-measured concentrations and daily doses, are reported in the Executive Summary and Conclusions sections of the DER.

All validity requirements were met. Specifically, controls produced an average of 26 14-day old survivors per hen during the 12-week production phase (minimum of 12 quail per pen during a 10-week production phase), the egg shell thickness of control eggs was 0.20 mm (minimum of 0.19 mm for quail), and 6% adult control mortality was observed during the study (no more than 10% acceptable in controls).

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During the egg-laying period, severe injuries from fighting were observed in some of the pairs. For humane reasons, the pairs were separated for 1 to 2 weeks, which was needed to cure the injuries. After the condition of the injured bird was improved, the pairs were reunited. Affected pairs included: Pair 19 of the control group for egg-laying weeks 3 to 5; Pair 24 of the 100-mg/kg group for egg-laying weeks 4 to 5, and Pair 32 for weeks 5 to 6; Pair 42 of the 300-mg/kg group for egg-laying weeks 4 to 6, and Pair 52 for weeks 4 to 5; and Pairs 61 and 69 of the 1000-mg/kg group for egg-laying weeks 4 to 5. It was reported that since eggs were laid also during the separation period and in the week after, the separation time was too short to influence the fertilization time markedly. Thus, egg data obtained during separation was not excluded from the statistical evaluation.

Ten-gram portions of treated-diet samples were combined with 20 mL of double-distilled water and allowed to sit for 20 minutes at ambient temperature. The samples were then extracted twice with 35 mL of acetonitrile by shaking 30 minutes at ambient temperature and subsequent sonification (5 minutes). The extracts were combined, filtered, and diluted with acetonitrile (to 100 mL) prior to analysis by HPLC with UV (270 nm) detection. The analytical LOQ was 1.00 mg/L, corresponding to 10.0 mg/kg feed.

In method validation assessments, the average recoveries of the test substance were $100.1 \pm 1.9\%$ and $84.7 \pm 4.6\%$ in fortified feed samples containing 500 and 5000 mg/kg BAS 800 H, respectively.

In-life dates were February 16 – August 28, 2006.

G. CONCLUSIONS:

This study is scientifically sound and is classified as ACCEPTABLE to U.S. EPA and as FULLY RELIABLE to PMRA and APVMA. The reviewer's analysis detected significant reductions in hatchling body weight at the two highest treatment levels. No other biologically-significant treatment-related effects were observed on any adult or offspring parameter.

NOAEC: 96.0 mg a.i./kg diet (7.3 mg a.i./kg bw)

LOAEC: 282 mg a.i./kg diet (20.7 mg a.i./kg bw)

Endpoint(s) Affected: hatchling body weight

III. REFERENCES:

A reference list was not provided.

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Bobwhite quail repro, Saflufenacil, MRID 471279-15

PRINTOUT OF RAW DATA

Obs	TRT	EL	EC	ENC_EL	ES	ES_EL	VE	VE_ES	LE	LE_VE	NH	NH_EL	NH_ES
1	Ctrl	77	3	96.10	68	88.31	65	95.59	62	95.38	51	66.23	75.00
2	Ctrl	67	2	97.01	60	89.55	45	75.00	43	95.56	40	59.70	66.67
3	Ctrl	65	5	92.31	55	84.62	48	87.27	48	100.00	37	56.92	67.27
4	Ctrl	64	3	95.31	55	85.94	54	98.18	54	100.00	38	59.38	69.09
5	Ctrl	72	1	98.61	65	90.28	64	98.46	64	100.00	53	73.61	81.54
6	Ctrl	68	1	98.53	61	89.71	60	98.36	60	100.00	58	85.29	95.08
7	Ctrl	.	.	.	.	.	.	.	.	.	.	.	.
8	Ctrl	77	2	97.40	69	89.61	67	97.10	66	98.51	60	77.92	86.96
9	Ctrl	31	1	96.77	27	87.10	27	100.00	27	100.00	20	64.52	74.07
10	Ctrl	.	.	.	.	.	.	.	.	.	.	.	.
11	Ctrl	68	4	94.12	59	86.76	59	100.00	57	96.61	54	79.41	91.53
12	Ctrl	52	2	96.15	46	88.46	44	95.65	44	100.00	41	78.85	89.13
13	Ctrl	62	4	93.55	53	85.48	53	100.00	53	100.00	49	79.03	92.45
14	Ctrl	25	5	80.00	17	68.00	17	100.00	17	100.00	15	60.00	88.24
15	Ctrl	.	.	.	.	.	.	.	.	.	.	.	.
16	Ctrl	64	3	95.31	56	87.50	56	100.00	53	94.64	42	65.63	75.00
17	Ctrl	47	9	80.85	33	70.21	26	78.79	22	84.62	17	36.17	51.52
18	Ctrl	.	.	.	.	.	.	.	.	.	.	.	.
19	Ctrl	34	1	97.06	30	88.24	29	96.67	27	93.10	21	61.76	70.00
20	Ctrl	.	.	.	.	.	.	.	.	.	.	.	.
21	Dose1	64	3	95.31	56	87.50	56	100.00	54	96.43	50	78.13	89.29
22	Dose1	.	.	.	.	.	.	.	.	.	.	.	.
23	Dose1	55	8	85.45	42	76.36	42	100.00	41	97.62	35	63.64	83.33
24	Dose1	46	12	73.91	30	65.22	29	96.67	28	96.55	22	47.83	73.33
25	Dose1	80	6	92.50	68	85.00	65	95.59	65	100.00	56	70.00	82.35
26	Dose1	.	.	.	.	.	.	.	.	.	.	.	.
27	Dose1	69	3	95.65	61	88.41	58	95.08	58	100.00	49	71.01	80.33
28	Dose1	60	6	90.00	49	81.67	31	63.27	31	100.00	27	45.00	55.10
29	Dose1	39	9	76.92	26	66.67	23	88.46	23	100.00	20	51.28	76.92
30	Dose1	71	6	91.55	60	84.51	33	55.00	32	96.97	28	39.44	46.67
31	Dose1	63	7	88.89	50	79.37	50	100.00	49	98.00	43	68.25	86.00
32	Dose1	60	4	93.33	51	85.00	24	47.06	21	87.50	15	25.00	29.41
33	Dose1	74	4	94.59	64	86.49	49	76.56	37	75.51	23	31.08	35.94
34	Dose1	52	1	98.08	46	88.46	35	76.09	34	97.14	32	61.54	69.57
35	Dose1	58	8	86.21	46	79.31	45	97.83	41	91.11	35	60.34	76.09
36	Dose1	75	2	97.33	67	89.33	67	100.00	67	100.00	48	64.00	71.64
37	Dose1	55	5	90.91	45	81.82	44	97.78	44	100.00	41	74.55	91.11
38	Dose1	.	.	.	.	.	.	.	.	.	.	.	.
39	Dose1	.	.	.	.	.	.	.	.	.	.	.	.
40	Dose1	67	4	94.03	58	86.57	57	98.28	57	100.00	51	76.12	87.93
41	Dose2	.	.	.	.	.	.	.	.	.	.	.	.
42	Dose2	.	.	.	.	.	.	.	.	.	.	.	.
43	Dose2	69	2	97.10	62	89.86	45	72.58	41	91.11	35	50.72	56.45
44	Dose2	65	5	92.31	55	84.62	54	98.18	53	98.15	49	75.38	89.09
45	Dose2	50	2	96.00	43	86.00	42	97.67	42	100.00	40	80.00	93.02
46	Dose2	65	4	93.85	56	86.15	56	100.00	56	100.00	42	64.62	75.00
47	Dose2	4	0	100.00	3	75.00	3	100.00	3	100.00	3	75.00	100.00
48	Dose2	66	4	93.94	57	86.36	56	98.25	55	98.21	45	68.18	78.95
49	Dose2	36	0	100.00	33	91.67	33	100.00	32	96.97	26	72.22	78.79

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50	Dose2	68	3	95.59	60	88.24	58	96.67	56	96.55	49	72.06	81.67
51	Dose2	71	1	98.59	64	90.14	63	98.44	62	98.41	51	71.83	79.69
52	Dose2	47	2	95.74	40	85.11	23	57.50	23	100.00	22	46.81	55.00
53	Dose2	56	3	94.64	48	85.71	46	95.83	46	100.00	45	80.36	93.75
54	Dose2	72	3	95.83	64	88.89	64	100.00	63	98.44	54	75.00	84.38
55	Dose2	.	.	.	.	.	.	.	.	.	.	.	.
56	Dose2	68	1	98.53	62	91.18	62	100.00	61	98.39	50	73.53	80.65
57	Dose2	.	.	.	.	.	.	.	.	.	.	.	.
58	Dose2	1	1	0.00	0	0.00	0	.	0	.	0	0.00	.
59	Dose2	77	1	98.70	70	90.91	64	91.43	63	98.44	60	77.92	85.71
60	Dose2	.	.	.	.	.	.	.	.	.	.	.	.
61	Dose3	7	0	100.00	4	57.14	0	0.00	0	.	0	0.00	0.00
62	Dose3	53	1	98.11	47	88.68	33	70.21	33	100.00	31	58.49	65.96
63	Dose3	13	0	100.00	10	76.92	9	90.00	7	77.78	5	38.46	50.00
64	Dose3	.	.	.	.	.	.	.	.	.	.	.	.
65	Dose3	62	2	96.77	55	88.71	51	92.73	50	98.04	39	62.90	70.91
66	Dose3	.	.	.	.	.	.	.	.	.	.	.	.
67	Dose3	.	.	.	.	.	.	.	.	.	.	.	.
68	Dose3	66	3	95.45	58	87.88	52	89.66	51	98.08	47	71.21	81.03
69	Dose3	71	7	90.14	58	81.69	35	60.34	34	97.14	32	45.07	55.17
70	Dose3	35	1	97.14	31	88.57	29	93.55	29	100.00	25	71.43	80.65
71	Dose3	45	7	84.44	34	75.56	34	100.00	34	100.00	31	68.89	91.18
72	Dose3	72	6	91.67	60	83.33	59	98.33	59	100.00	50	69.44	83.33
73	Dose3	55	7	87.27	43	78.18	38	88.37	38	100.00	31	56.36	72.09
74	Dose3	77	4	94.81	67	87.01	67	100.00	66	98.51	49	63.64	73.13
75	Dose3	73	6	91.78	61	83.56	58	95.08	58	100.00	55	75.34	90.16
76	Dose3	.	.	.	.	.	.	.	.	.	.	.	.
77	Dose3	.	.	.	.	.	.	.	.	.	.	.	.
78	Dose3	44	5	88.64	34	77.27	24	70.59	15	62.50	10	22.73	29.41
79	Dose3	70	2	97.14	63	90.00	62	98.41	61	98.39	49	70.00	77.78
80	Dose3	.	.	.	.	.	.	.	.	.	.	.	.

Bobwhite quail repro, Saflufenacil, MRID 471279-15

PRINTOUT OF RAW DATA (continued)

Obs	TRT	NH_LE	HS	HS_ES	HS_NH	THICK	HATWT	SURVWT	FOOD	WTGAINM	WTGAINF
1	Ctrl	82.26	43	63.24	84.31	0.20	7	22	16	10	21
2	Ctrl	93.02	22	36.67	55.00	0.21	6	18	17	3	43
3	Ctrl	77.08	24	43.64	64.86	0.20	6	20	16	-50	26
4	Ctrl	70.37	32	58.18	84.21	0.20	7	21	16	9	33
5	Ctrl	82.81	34	52.31	64.15	0.21	6	21	16	24	37
6	Ctrl	96.67	43	70.49	74.14	0.23	6	23	17	18	52
7	Ctrl	.	.	.	.	.	.	.	.	.	.
8	Ctrl	90.91	41	59.42	68.33	0.19	7	23	15	-13	35
9	Ctrl	74.07	5	18.52	25.00	0.20	6	21	15	5	16
10	Ctrl	.	.	.	.	.	.	.	.	.	.
11	Ctrl	94.74	38	64.41	70.37	0.20	7	24	17	32	47
12	Ctrl	93.18	32	69.57	78.05	0.19	7	21	17	-17	34
13	Ctrl	92.45	37	69.81	75.51	0.18	6	20	15	13	15
14	Ctrl	88.24	9	52.94	60.00	0.20	7	20	15	36	16
15	Ctrl	.	.	.	.	.	.	.	.	.	.
16	Ctrl	79.25	29	51.79	69.05	0.19	7	22	15	7	30
17	Ctrl	77.27	15	45.45	88.24	0.20	7	25	15	26	44
18	Ctrl

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19	Ctrl	77.78	10	33.33	47.62	0.20	7	21	17	-16	29
20	Ctrl
21	Dose1	92.59	32	57.14	64.00	0.19	6	21	17	11	13
22	Dose1	.	.	.	.	.	.	.	.	.	.
23	Dose1	85.37	20	47.62	57.14	0.19	7	24	17	5	44
24	Dose1	78.57	21	70.00	95.45	0.18	8	23	17	9	51
25	Dose1	86.15	49	72.06	87.50	0.21	7	21	15	15	74
26	Dose1	.	.	.	.	.	.	.	.	.	.
27	Dose1	84.48	34	55.74	69.39	0.20	6	20	16	14	36
28	Dose1	87.10	25	51.02	92.59	0.21	6	19	18	7	58
29	Dose1	86.96	12	46.15	60.00	0.19	6	20	17	17	45
30	Dose1	87.50	25	41.67	89.29	0.19	7	23	19	-34	61
31	Dose1	87.76	39	78.00	90.70	0.20	7	23	16	28	-9
32	Dose1	71.43	11	21.57	73.33	0.22	6	18	16	-26	22
33	Dose1	62.16	15	23.44	65.22	0.20	6	22	16	23	24
34	Dose1	94.12	26	56.52	81.25	0.19	6	20	15	18	27
35	Dose1	85.37	28	60.87	80.00	0.20	7	20	16	11	59
36	Dose1	71.64	40	59.70	83.33	0.19	6	21	16	3	49
37	Dose1	93.18	21	46.67	51.22	0.17	6	19	16	12	55
38	Dose1	.	.	.	.	.	.	.	.	.	.
39	Dose1	.	.	.	.	.	.	.	.	.	.
40	Dose1	89.47	44	75.86	86.27	0.21	6	20	18	-6	28
41	Dose2	.	.	.	.	.	.	.	.	.	.
42	Dose2	.	.	.	.	.	.	.	.	.	.
43	Dose2	85.37	23	37.10	65.71	0.21	7	24	18	9	42
44	Dose2	92.45	44	80.00	89.80	0.21	7	21	16	19	50
45	Dose2	95.24	21	48.84	52.50	0.18	7	22	17	40	48
46	Dose2	75.00	22	39.29	52.38	0.19	5	17	14	11	44
47	Dose2	100.00	3	100.00	100.00	0.22	5	0	15	3	23
48	Dose2	81.82	31	54.39	68.89	0.20	6	19	17	-18	35
49	Dose2	81.25	19	57.58	73.08	0.20	7	21	16	20	44
50	Dose2	87.50	23	38.33	46.94	0.21	6	18	16	14	32
51	Dose2	82.26	40	62.50	78.43	0.20	7	21	17	30	47
52	Dose2	95.65	16	40.00	72.73	0.19	6	23	16	-7	0
53	Dose2	97.83	37	77.08	82.22	0.21	6	22	17	7	20
54	Dose2	85.71	39	60.94	72.22	0.22	6	23	16	9	52
55	Dose2	.	.	.	.	.	.	.	.	.	.
56	Dose2	81.97	22	35.48	44.00	0.20	6	19	16	10	58
57	Dose2	.	.	.	.	.	.	.	.	.	.
58	Dose2	.	0	.	.	.	.	.	13	.	.
59	Dose2	95.24	27	38.57	45.00	0.19	6	20	17	6	38
60	Dose2	.	.	.	.	.	.	.	.	.	.
61	Dose3	.	0	0.00	.	0.21	.	.	15	.	.
62	Dose3	93.94	12	25.53	38.71	0.19	7	22	16	9	25
63	Dose3	71.43	0	0.00	0.00	0.20	5	.	16	19	-9
64	Dose3	.	.	.	.	.	.	.	.	.	.
65	Dose3	78.00	27	49.09	69.23	0.19	6	20	14	4	27
66	Dose3	.	.	.	.	.	.	.	.	.	.
67	Dose3	.	.	.	.	.	.	.	.	.	.
68	Dose3	92.16	36	62.07	76.60	0.19	6	21	17	.	36
69	Dose3	94.12	28	48.28	87.50	0.19	6	20	18	-7	55
70	Dose3	86.21	18	58.06	72.00	0.20	6	19	16	17	20

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71	Dose3	91.18	20	58.82	64.52	0.19	6	20	14	.	.
72	Dose3	84.75	38	63.33	76.00	0.21	7	23	19	16	31
73	Dose3	81.58	19	44.19	61.29	0.20	6	19	16	8	24
74	Dose3	74.24	32	47.76	65.31	0.20	6	23	16	2	19
75	Dose3	94.83	29	47.54	52.73	0.19	6	20	17	-8	48
76	Dose3	.	.	.	.	.	.	.	.	.	.
77	Dose3	.	.	.	.	.	.	.	.	.	.
78	Dose3	66.67	5	14.71	50.00	0.17	6	19	17	3	-14
79	Dose3	80.33	32	50.79	65.31	0.21	6	20	15	-2	45
80	Dose3	.	.	.	.	.	.	.	.	.	.

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE EL (Eggs Laid)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.887	<.001	2.241	0.094	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	58.20	16.66	4.30	28.63	48.97, 67.43
Dose1	16	61.75	10.96	2.74	17.75	55.91, 67.59
Dose2	15	54.33	23.67	6.11	43.57	41.22, 67.44
Dose3	14	53.07	22.17	5.92	41.77	40.27, 65.87

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	64.00	25.00	77.00	.	.
Dose1	61.50	39.00	80.00	106.10	-6.10
Dose2	65.00	1.00	77.00	93.36	6.64
Dose3	58.50	7.00	77.00	91.19	8.81

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	0.39	0.943

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	64.00	.	.
Dose1	61.50	1.000	0.547
Dose2	65.00	1.000	0.480
Dose3	58.50	1.000	0.336

SUMMARY

NOEC

LOEC

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15
ANALYSIS RESULTS FOR VARIABLE NEG_EC (Eggs Cracked)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.972	0.187	2.632	0.059	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	3.07	2.15	0.56	70.23	1.87, 4.26
Dose1	16	5.50	2.85	0.71	51.85	3.98, 7.02
Dose2	15	2.13	1.51	0.39	70.57	1.30, 2.97
Dose3	14	3.64	2.68	0.72	73.51	2.10, 5.19

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	3.00	1.00	9.00	.	.
Dose1	5.50	1.00	12.00	179.35	-79.35
Dose2	2.00	0.00	5.00	69.57	30.43
Dose3	3.50	0.00	7.00	118.79	-18.79

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	56	5.64	0.002

Dunnett - testing each trt mean signif. greater than control

Williams - test assumes dose-response relationship, testing positive trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5
Ctrl	3.07	.	3.07	.	0.029	0.701	0.913	.	.
Dose1	5.50	0.008	3.80	0.234	.	0.001	0.150	.	.
Dose2	2.13	0.972	3.80	0.255	.	.	0.322	.	.
Dose3	3.64	0.472	3.80	0.269	.	.	.	.	.

SUMMARY

	NOEC	LOEC
Dunnett	<lowest dose	Dose1
Williams	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15
ANALYSIS RESULTS FOR VARIABLE ENC_EL ((EL-EC)/EL (%))

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.465	<.001	1.730	0.171	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	93.94	5.76	1.49	6.13	90.75, 97.13
Dose1	16	90.29	6.84	1.71	7.58	86.65, 93.94
Dose2	15	90.06	25.02	6.46	27.78	76.20, 100.00
Dose3	14	93.81	4.88	1.30	5.20	91.00, 96.63

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	96.10	80.00	98.61	.	.
Dose1	92.02	73.91	98.08	96.12	3.88
Dose2	95.83	0.00	100.00	95.86	4.14
Dose3	95.13	84.44	100.00	99.86	0.14

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	8.10	0.044

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	96.10	.	.
Dose1	92.02	0.059	0.015
Dose2	95.83	0.808	0.724
Dose3	95.13	1.000	0.692

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE ES (Eggs Set)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.899	<.001	1.412	0.249	USE NON-PARAMETRIC TESTS

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	50.27	16.10	4.16	32.03	41.35,	59.18
Dose1	16	51.19	12.13	3.03	23.69	44.72,	57.65
Dose2	15	47.80	21.33	5.51	44.62	35.99,	59.61
Dose3	14	44.64	19.76	5.28	44.27	33.23,	56.05

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	55.00	17.00	69.00	.	.
Dose1	50.50	26.00	68.00	101.83	-1.83
Dose2	56.00	0.00	70.00	95.09	4.91
Dose3	51.00	4.00	67.00	88.81	11.19

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	0.56	0.906

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	55.00	.	.
Dose1	50.50	1.000	0.399
Dose2	56.00	1.000	0.480
Dose3	51.00	0.884	0.278

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE ES_EL (EggsSet/EggsLaid (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.552	<.001	1.393	0.254	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	85.32	6.80	1.75	7.97	81.55,	89.08
Dose1	16	81.98	7.28	1.82	8.88	78.10,	85.86
Dose2	15	81.32	22.87	5.90	28.12	68.66,	93.98
Dose3	14	81.75	8.69	2.32	10.63	76.73,	86.77

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	87.50	68.00	90.28	.	.
Dose1	84.75	65.22	89.33	96.09	3.91
Dose2	86.36	0.00	91.67	95.32	4.68
Dose3	83.45	57.14	90.00	95.82	4.18

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	6.24	0.100

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	87.50	.	.
Dose1	84.75	0.070	0.018
Dose2	86.36	1.000	0.512
Dose3	83.45	0.313	0.216

SUMMARY

MannWhit (Bonf adjust)

Jonckheere

NOEC

Dose3

Dose3

LOEC

>highest dose

>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE VE (Viable Embryo(d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.944	0.008	0.796	0.501	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	47.60	15.96	4.12	33.53	38.76, 56.44
Dose1	16	44.25	14.10	3.52	31.86	36.74, 51.76
Dose2	15	44.60	21.13	5.46	47.38	32.90, 56.30
Dose3	14	39.36	20.02	5.35	50.86	27.80, 50.92

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	53.00	17.00	67.00	.	.
Dose1	44.50	23.00	67.00	92.96	7.04
Dose2	54.00	0.00	64.00	93.70	6.30
Dose3	36.50	0.00	67.00	82.68	17.32

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.30	0.728

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	53.00	.	.
Dose1	44.50	0.778	0.251
Dose2	54.00	1.000	0.420
Dose3	36.50	0.486	0.212

SUMMARY

MannWhit (Bonf adjust)

Jonckheere

NOEC

Dose3

Dose3

LOEC

>highest dose

>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE VE_ES (ViableEmbryo/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.750	<.001	3.400	0.024	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	94.74	7.96	2.06	8.41	90.33, 99.15
Dose1	16	86.73	17.66	4.42	20.37	77.32, 96.14
Dose2	14	93.32	12.56	3.36	13.46	86.07, 100.00
Dose3	14	81.95	26.64	7.12	32.51	66.56, 97.33

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	98.18	75.00	100.00	.	.
Dose1	96.13	47.06	100.00	91.55	8.45
Dose2	98.21	57.50	100.00	98.51	1.49
Dose3	91.36	0.00	100.00	86.50	13.50

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	5.52	0.137

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

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Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	98.18	.	.
Dose1	96.13	0.348	0.107
Dose2	98.21	1.000	0.500
Dose3	91.36	0.091	0.080

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE LE (Live Embryo(d21))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.949	0.014	0.755	0.524	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	46.47	16.06	4.15	34.57	37.57, 55.36
Dose1	16	42.63	14.46	3.61	33.92	34.92, 50.33
Dose2	15	43.73	20.78	5.36	47.51	32.23, 55.24
Dose3	14	38.21	20.64	5.52	54.01	26.30, 50.13

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	53.00	17.00	66.00	.	.
Dose1	41.00	21.00	67.00	91.73	8.27
Dose2	53.00	0.00	63.00	94.12	5.88
Dose3	36.00	0.00	66.00	82.24	17.76

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	56	0.52	0.671

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	46.47	.	46.47	.	0.934	0.976	0.612	.	.
Dose1	42.63	0.502	43.16	0.365	.	0.998	0.909	.	.
Dose2	43.73	0.581	43.16	0.394	.	.	0.844	.	.
Dose3	38.21	0.241	38.21	0.147

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SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE LE_VE (LiveEmbryo/ViableEmbryo (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.659	<.001	3.700	0.017	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	97.23	4.25	1.10	4.37	94.88, 99.58
Dose1	16	96.05	6.52	1.63	6.79	92.58, 99.53
Dose2	14	98.19	2.33	0.62	2.38	96.84, 99.54
Dose3	13	94.65	11.36	3.15	12.00	87.78, 100.00

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	100.00	84.62	100.00	.	.
Dose1	97.81	75.51	100.00	98.79	1.21
Dose2	98.43	91.11	100.00	100.99	-0.99
Dose3	98.51	62.50	100.00	97.35	2.65

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	0.50	0.919

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	100.00	.	.
Dose1	97.81	1.000	0.384
Dose2	98.43	1.000	0.569
Dose3	98.51	1.000	0.631

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE NH (Number Hatched)

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TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.943	0.007	0.372	0.773	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	39.73	15.17	3.92	38.19	31.33, 48.14
Dose1	16	35.94	12.74	3.18	35.44	29.15, 42.72
Dose2	15	38.07	17.91	4.62	47.05	28.15, 47.99
Dose3	14	32.43	17.52	4.68	54.03	22.31, 42.55

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	41.00	15.00	60.00	.	.
Dose1	35.00	15.00	56.00	90.45	9.55
Dose2	45.00	0.00	60.00	95.81	4.19
Dose3	31.50	0.00	55.00	81.62	18.38

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.92	0.588

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	41.00	.	.
Dose1	35.00	0.653	0.209
Dose2	45.00	1.000	0.484
Dose3	31.50	0.359	0.206

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE NH_EL (NumberHatched/EggsLaid (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.846	<.001	0.836	0.480	USE NON-PARAMETRIC TESTS

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	66.96	12.49	3.23	18.66	60.04,	73.88
Dose1	16	57.95	16.30	4.08	28.13	49.26,	66.64
Dose2	15	65.58	20.57	5.31	31.36	54.19,	76.97
Dose3	14	55.28	21.77	5.82	39.38	42.71,	67.85

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	65.63	36.17	85.29	.	.
Dose1	62.59	25.00	78.13	86.54	13.46
Dose2	72.22	0.00	80.36	97.93	2.07
Dose3	63.27	0.00	75.34	82.56	17.44

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	6.87	0.076

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	65.63	.	.
Dose1	62.59	0.256	0.077
Dose2	72.22	1.000	0.686
Dose3	63.27	0.251	0.190

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE NH_ES (NumberHatched/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.897	<.001	2.082	0.113	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	78.24	12.32	3.18	15.75	71.41,	85.06
Dose1	16	70.94	19.13	4.78	26.97	60.74,	81.13
Dose2	14	80.87	12.69	3.39	15.69	73.54,	88.19
Dose3	14	65.77	25.23	6.74	38.36	51.20,	80.34

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	75.00	51.52	95.08	.	.
Dose1	76.51	29.41	91.11	90.67	9.33
Dose2	81.16	55.00	100.00	103.36	-3.36
Dose3	72.61	0.00	91.18	84.07	15.93

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	4.59	0.205

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	75.00	.	.
Dose1	76.51	1.000	0.215
Dose2	81.16	1.000	0.748
Dose3	72.61	0.291	0.234

SUMMARY

MannWhit (Bonf adjust)

NOEC

Dose3

LOEC

>highest dose

Jonckheere

Dose3

>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE NH_LE (NumberHatched/LiveEmbryo (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
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Test Stat	P-value	Test Stat	P-value
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0.950	0.018	0.303	0.823	USE PARAMETRIC TESTS
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BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	84.67	8.51	2.20	10.06	79.96, 89.39
Dose1	16	83.99	8.80	2.20	10.47	79.30, 88.68
Dose2	14	88.38	7.63	2.04	8.63	83.97, 92.78
Dose3	13	83.80	9.36	2.59	11.16	78.15, 89.45

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	82.81	70.37	96.67	.	.
Dose1	86.56	62.16	94.12	99.19	0.81
Dose2	86.61	75.00	100.00	104.37	-4.37
Dose3	84.75	66.67	94.83	98.97	1.03

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	54	0.88	0.458

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	84.67	.	85.58	.	0.996	0.654	0.993	.	.
Dose1	83.99	0.667	85.58	0.703	.	0.507	1.000	.	.
Dose2	88.38	0.978	85.58	0.734	.	.	0.515	.	.
Dose3	83.80	0.648	83.80	0.514	.	.	.	.	.

SUMMARY

Dunnett
Williams

NOEC

Dose3
Dose3

LOEC

>highest dose
>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE HS (Hatching Survival(d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.964	0.074	0.216	0.885	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	27.60	12.82	3.31	46.46	20.50, 34.70
Dose1	16	27.63	11.28	2.82	40.85	21.61, 33.64
Dose2	15	24.47	12.62	3.26	51.58	17.48, 31.46
Dose3	14	21.14	12.82	3.43	60.65	13.74, 28.55

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	32.00	5.00	43.00	.	.
Dose1	25.50	11.00	49.00	100.09	-0.09
Dose2	23.00	0.00	44.00	88.65	11.35
Dose3	23.50	0.00	38.00	76.60	23.40

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	56	0.91	0.442

Dunnett - testing each trt mean signif. less than control

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Williams - test assumes dose-response relationship, testing negative trend
Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5
Ctrl	27.60	.	27.61	.	1.000	0.899	0.502	.	.
Dose1	27.63	0.752	27.61	0.585	.	0.893	0.486	.	.
Dose2	24.47	0.456	24.47	0.314	.	.	0.888	.	.
Dose3	21.14	0.185	21.14	0.107	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE HS_ES (HatchingSurvival/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.975	0.259	0.964	0.416	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	52.65	15.01	3.87	28.50	44.34,	60.96
Dose1	16	54.00	16.41	4.10	30.38	45.26,	62.74
Dose2	14	55.01	19.60	5.24	35.64	43.69,	66.32
Dose3	14	40.73	21.76	5.82	53.43	28.16,	53.29

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	52.94	18.52	70.49	.	.
Dose1	56.13	21.57	78.00	102.57	-2.57
Dose2	51.61	35.48	100.00	104.47	-4.47
Dose3	48.02	0.00	63.33	77.35	22.65

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	55	1.88	0.143

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Ctrl	52.65	.	53.86	.	0.997	0.985	0.305	.	.
Dose1	54.00	0.820	53.86	0.660	.	0.999	0.206	.	.
Dose2	55.01	0.859	53.86	0.693	.	.	0.176	.	.
Dose3	40.73	0.101	40.73	0.053	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE HS_NH (HatchingSurvival/NumberHatched (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.946	0.012	0.338	0.798	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	67.26	16.16	4.17	24.02	58.31, 76.20
Dose1	16	76.67	13.93	3.48	18.17	69.24, 84.09
Dose2	14	67.42	17.34	4.64	25.72	57.41, 77.43
Dose3	13	59.94	21.99	6.10	36.68	46.65, 73.22

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	69.05	25.00	88.24	.	.
Dose1	80.63	51.22	95.45	113.99	-13.99
Dose2	70.56	44.00	100.00	100.25	-0.25
Dose3	65.31	0.00	87.50	89.12	10.88

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	54	2.27	0.090

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship; testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	67.26	.	72.11	.	0.440	1.000	0.683	.	.
Dose1	76.67	0.992	72.11	0.857	.	0.471	0.059	.	.
Dose2	67.42	0.763	67.42	0.629	.	.	0.679	.	.
Dose3	59.94	0.284	59.94	0.178	.	.	.	.	.

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID.471279-15

ANALYSIS RESULTS FOR VARIABLE THICK (Eggshell thickness)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.982	0.520	0.620	0.605	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	0.20	0.01	0.00	5.67	0.19, 0.21
Dose1	16	0.20	0.01	0.00	6.41	0.19, 0.20
Dose2	14	0.20	0.01	0.00	5.88	0.20, 0.21
Dose3	14	0.20	0.01	0.00	5.57	0.19, 0.20

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	0.20	0.18	0.23	.	.
Dose1	0.20	0.17	0.22	98.12	1.88
Dose2	0.20	0.18	0.22	101.07	-1.07
Dose3	0.20	0.17	0.21	97.86	2.14

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	55	0.99	0.403

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	0.20	.	0.20	.	0.810	0.961	0.759	.	.
Dose1	0.20	0.371	0.20	0.480	.	0.521	0.999	.	.
Dose2	0.20	0.893	0.20	0.515	.	.	0.474	.	.
Dose3	0.20	0.333	0.20	0.217	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE HATWT (Hatchling Weight)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.986	0.760	0.606	0.614	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	6.61	0.38	0.10	5.68	6.40,	6.81
Dose1	16	6.44	0.54	0.14	8.44	6.15,	6.73
Dose2	14	6.25	0.54	0.14	8.67	5.94,	6.56
Dose3	13	5.98	0.44	0.12	7.39	5.71,	6.24

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	6.60	5.80	7.10	.	.
Dose1	6.25	5.70	7.60	97.53	2.47
Dose2	6.35	5.00	7.00	94.60	5.40
Dose3	6.10	5.00	6.60	90.47	9.53

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	54	4.39	0.008

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5
Ctrl	6.61	.	6.61	.	0.784	0.205	0.006	.	.
Dose1	6.44	0.352	6.44	0.210	.	0.693	0.058	.	.
Dose2	6.25	0.065	6.25	0.031	.	.	0.463	.	.
Dose3	5.98	0.002	5.98	<.001	.	.	.	.	.

SUMMARY

Dunnett
Williams

NOEC

Dose2
Dose1

LOEC

Dose3
Dose2

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE SURVWT (Survivor Wt (d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

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Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.663	<.001	2.386	0.079	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	21.43	1.69	0.44	7.87	20.49, 22.36
Dose1	16	20.83	1.80	0.45	8.62	19.87, 21.78
Dose2	14	19.24	5.90	1.58	30.67	15.84, 22.65
Dose3	12	20.40	1.44	0.41	7.04	19.49, 21.31

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	21.00	18.30	24.80	.	.
Dose1	20.60	17.50	23.90	97.19	2.81
Dose2	20.60	0.00	24.20	89.81	10.19
Dose3	20.10	18.50	23.30	95.21	4.79

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	2.71	0.438

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	21.00	.	.
Dose1	20.60	0.687	0.220
Dose2	20.60	0.385	0.119
Dose3	20.10	0.163	0.060

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE FOOD (Food Consumption)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.987	0.781	0.300	0.825	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	15.87	0.89	0.23	5.62	15.38,	16.37
Dose1	16	16.53	1.04	0.26	6.31	15.97,	17.08
Dose2	15	16.06	1.30	0.34	8.12	15.34,	16.78
Dose3	14	16.18	1.35	0.36	8.31	15.40,	16.96

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	16.00	14.50	17.40	.	.
Dose1	16.25	14.90	18.50	104.11	-4.11
Dose2	16.20	12.50	18.00	101.18	-1.18
Dose3	16.00	14.10	18.80	101.92	-1.92

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	56	0.88	0.458

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5
Ctrl	15.87	.	16.21	.	0.404	0.971	0.892	.	.
Dose1	16.53	0.993	16.21	0.864	.	0.679	0.845	.	.
Dose2	16.06	0.881	16.12	0.832	.	.	0.993	.	.
Dose3	16.18	0.931	16.12	0.846	.	.	.	.	.

SUMMARY

Dunnett

Williams

NOEC

Dose3

Dose3

LOEC

>highest dose

>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE WTGAINM (Male wt gain)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.939	0.007	1.515	0.222	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	5.76	22.39	5.78	388.72	-6.64,	18.16
Dose1	16	6.76	16.44	4.11	243.06	-2.00,	15.52
Dose2	14	10.92	14.11	3.77	129.24	2.77,	19.07
Dose3	11	5.54	9.31	2.81	168.20	-0.72,	11.79

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	9.00	-50.10	35.60	.	.
Dose1	11.05	-34.10	28.10	117.40	-17.40
Dose2	9.35	-17.80	39.60	189.61	-89.61
Dose3	4.30	-7.80	19.30	96.12	3.88

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.69	0.639

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	9.00	.	.
Dose1	11.05	1.000	0.524
Dose2	9.35	1.000	0.646
Dose3	4.30	0.809	0.276

SUMMARY

MannWhit (Bonf adjust)

Jonckheere

NOEC

Dose3

Dose3

LOEC

>highest dose

>highest dose

Bobwhite quail repro, Saflufenacil, MRID 471279-15

ANALYSIS RESULTS FOR VARIABLE WTGAINF (Female wt gain)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.965	0.095	1.645	0.190	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	31.91	11.62	3.00	36.41	25.48, 38.35
Dose1	16	39.93	21.27	5.32	53.28	28.59, 51.27
Dose2	14	38.04	15.25	4.08	40.10	29.23, 46.85
Dose3	12	25.48	20.72	5.98	81.34	12.31, 38.64

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	32.60	15.20	51.70	.	.
Dose1	44.55	-8.60	74.30	125.12	-25.12
Dose2	43.30	0.40	57.60	119.21	-19.21
Dose3	26.00	-14.20	54.50	79.83	20.17

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

PMRA Submission Number: 2008-0430

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PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	53	1.85	0.149

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5
Ctrl	31.91	.	36.67	.	0.588	0.785	0.781	.	.
Dose1	39.93	0.984	36.67	0.850	.	0.991	0.151	.	.
Dose2	38.04	0.961	36.67	0.872	.	.	0.278	.	.
Dose3	25.48	0.352	25.48	0.231	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams		Dose3
		>highest dose

Data Evaluation Report on the Reproductive Effects of BAS 800 H (Saflufenacil) on Northern Bobwhite (*Colinus virginianus*)

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